

BULLETIN OF MISCELLANEOUS INFORMATION

No. 9 1927

ROYAL BOTANIC GARDENS, KEW

XLII. — AGRICULTURE AND HORTICULTURE IN MAJORCA. W. DALLIMORE.

At the beginning of September an opportunity occurred of visiting Majorca and although the visit was a hurried one, the kindness of several persons in the Island enabled me to see a good deal of the country and to obtain an insight into the activities of the people.

Primarily my business was connected with the Almond industry for which the Island is famous, but through the kindness of Engineer Director Don Filipe Fuster Rosenol, of the Estacion Arboricultura y Fruti-Cultura, Palma de Mallorca, of Mr. F. G. Short, an Englishman who conducts tourist and other agencies in Palma, and of Captain Munn, an Englishman resident in Puerto Alcudia, I was able to see and learn a good deal of other matters that concern the Islanders.

The greater number of country people are engaged in agricultural pursuits, although there are other small industries that absorb some of the workers; blankets, lace, basket and tile making are a few of the manufactures. In the towns tourists make work for many people, whilst a good many men are employed by the shipping firms in the ports.

The agricultural people appear to be thrifty and industrious, and although they are working under considerable difficulties they are said to be happy and contented, and many of them are reputed to be well-to-do. Perhaps the greatest difficulty the Islanders have to face is the shortage of water. No rain falls between early May and September, there are no lakes in the Island and the streams dry up during summer. From certain springs in the mountains some water is conducted to the towns, but most of the people have either to rely upon rain water storage tanks, or wells, for their water. Farmers and gardeners in the mountains collect and store water during the rains for summer use, whilst their brothers of the plains pump theirs from wells. A pump may be worked by a windmill, or a water wheel, turned by a mule or donkey, may be employed in places where water can be obtained within easy distance of the surface of the ground. In some places water may be found at a depth of a few feet, at others wells may have to be bored to a considerable depth.

With this water shortage it may only be expected that by the end of summer a good deal of land becomes parched. This was the case at the time of my visit and a great deal of the vegetation on

non-irrigated land was burnt up. There were few herbaceous plants to be seen and trees and shrubs were burnt and shrivelled. Everywhere about the towns and near the roads plant life was thick with white dust, of which there was a considerable depth on many of the roads. Bright spots amongst wild and cultivated plants, however, were seen in the Carob or Locust (*Ceratonia Siliqua* L.), and in the Mastic (*Pistacia Lentiscus* L.). In both cases the leaves were as fresh and green as if there had been frequent rain, whilst the Carob was bearing both ripe fruit and flowers and the Mastic abundant red berries. The Aleppo Pine (*Pinus halepensis* Mill.), and two evergreen Oaks (*Quercus Ilex* L. and *Q. Ballota* Desf.) had also withstood the drought very well.

The most important crop of the Island is undoubtedly the Almond. Of this a large number of varieties are cultivated. There is a doubt, however, as to whether many of these varieties are distinct and whether one variety may not be known under different names in different districts. This is one of the problems that Don Filipe Fuster Rosenol is setting himself to solve. He intends to collect all the named sorts and if possible reduce the number by grouping those that are alike under one definite name. A great deal of trouble is taken with the cultivation of Almond trees. In some cases they are planted in orchards many acres in extent, in others a few trees are grouped on a small terrace held up by stone walls. In almost all cases the trees are widely spaced and it is unusual for the branches of two trees to meet. The ground beneath the trees is cultivated and from it a crop of broad beans or corn is taken during the winter and spring months. It lies fallow during summer and is ploughed as soon as the Almonds are gathered. Both chemical and farmyard manures are used as fertilisers, and in many places the land appears to be on the poor side. Very often the orchards are composed entirely of Almonds but in some there may be a mixture of Almonds, Olives, Carobs, or Figs. Mixed orchards are more common on the higher land than on the plains. When the Almonds are ripe they are knocked off the branches by means of long bamboo poles and are then picked up by women and children. After drying in heaps, the nuts are separated from the husks, and the shells are then broken either by hand or machinery and the kernels extracted. The different forms do not appear to be kept separate in the gathering and shelling but the kernels are graded for marketing. There appears to be little waste in the Island. The shells of the Almonds even are carefully saved and used for burning for heating purposes. As soon as the crop is gathered the trees are carefully pruned, all inside wood and broken branches being cut away. All prunings are kept, tied in faggots and used in the bakeries. The same pruning is carried on with Olives, Carobs and Figs, thus a tree with a dense head is rarely seen. When a large Almond branch is broken it is cut off and grafts are inserted the following spring. The trees are usually between 20 and 30 feet high and always

standards with trunks 5 or 6 feet high. Most of the trees are said to be white-flowered. So prosperous is the Almond industry at the present time that as old Olive trees die they are replaced by Almonds and several newly-planted fields of Almonds were noticed on land recently reclaimed from the wild mountain side. A good deal of trouble is taken in preparing places for new trees. Old trees are grubbed up by the roots and I noticed in several orchards holes 4 to 5 feet across excavated for the coming planting season.

Next to the Almonds come the Olives. These trees also cover a considerable area of ground and they are carried higher up the mountains than the Almonds. Very often they are found on terraced ground and there are many instances of walls being built to support one or two trees. Most of the Olive trees are old, some very old, with curiously twisted and gnarled trunks, often hollow but usually with good heads of healthy branches. The Olive season follows the Almond season. The fruits are allowed to fall and are then picked up on frequent occasions by women and children. The first expression of oil usually takes place in the Island, the pulp afterwards being sent to the Mainland for further treatment.

The fruit of the Carob is collected and used as food for cattle, horses, mules and other animals. Figs are plentiful and at the time of my visit the second gathering was in progress. The fruits were opened and spread out on reed screens to dry. After the bulk of the fruit of these several trees has been collected, pigs are allowed to run over the ground and gather up anything they can find before the crop of beans or grain is sown. Fat pigs, by the way, are exported in large numbers from the Island to Barcelona during the winter months. A good deal of lard is prepared in Barcelona.

Grapes form another valuable agricultural crop in the Island. Several varieties are grown, white, black and red. Many are eaten, but there is a wine industry of considerable proportions in Majorca. Naturally, green fodder is very scarce in the summer months. Cattle are stall fed and I saw very few cows out of doors; goats, however, are plentiful. Alfalfa appears to be the chief fodder plant and that is irrigated.

Market garden crops are numerous and irrigated land is both well cropped and well cultivated. In the wet season cabbages, peas, beans, &c., are grown, and early potatoes are a source of income. During the summer large numbers of melons are grown, also sweet potatoes, peppers (*Capsicum*) which are used both green and ripe, whilst they are also dried for winter use. The egg plant (*Solanum Melongena*) is a common vegetable; spinach is widely grown as are also several salads; lettuce, however, is rather tough, endive is better; dandelions are found in the markets, there are quantities of large tomatoes which have a less pleasing appearance than those grown in England, whilst the potatoes look to be of poor quality; perhaps that is the reason why they are served in so many guises in the hotels. There is a considerable trade in a small variety of

tomato, known under the name of "Ramillete." This is extensively grown in Banalbufar, and is planted to trail over sticks in the way of peas; the large fruited varieties are allowed to trail on the ground. The fruits of "Ramillete" are oval, $1-1\frac{1}{2}$ inch long and they are gathered when ripe with the stalk attached. They are then threaded through the stalks in ropes, each about one metre long, about 100 fruits going to form one rope, the fruits being arranged in three rows in the rope. They are then hung vertically in an airy room where they keep in good condition for several months and are marketed during winter. The fruits are inspected every few days and any that show signs of decay are removed. Fruits that lose their stalks are marketed at once.

In addition to grapes, there are other fruits, notably peaches, apricots, pomegranates, oranges, lemons, apples, pears, plums and cherries. Fruits such as thrive out of doors in England have not the quality of the best English fruit. Probably lack of moisture may be the reason. Moreover there appear to be troublesome pests amongst some kinds of fruit trees. The formation of the Fruticetum at Palma marks a step taken by the Government towards demonstrating improved methods of fruit culture to the Islanders. It is intended to form collections of all kinds of fruit trees and to encourage visits from interested people. Eventually agricultural problems will also be investigated. One of the subjects engaging the attention of the Director at the present time is the study of the various varieties of Almond, another is an attempt to revive the silk industry of the Island, whilst a third is a test of the relative egg-laying value of various kinds of fowls. Fruit trials are to begin as soon as arrangements are completed for irrigating the ground. To aid in this purpose a well 32 metres deep has been sunk and a large reservoir is being built. One of the Director's duties is to go about the Island and lecture on horticultural questions.

There appears to be little or nothing done in the way of a cut flower industry and on several occasions I heard the comment that there was a good opening for some person to engage in that branch of horticulture.

Market gardening is practised on both the plains and mountain slopes. The mountains are terraced, and water for irrigation is stored in large tanks. At Banalbufar the steep mountain side is terraced for several hundreds of feet in height, narrow terrace after narrow terrace held up by stone walls; these walls are built wherever sufficient soil can be found to sustain plant life, and water is conserved by means of a very elaborate system of reservoirs.

Very few serious attempts appear to have been made with decorative gardening. The gardens attached to houses are usually small and the water problem in the summer months discourages householders from attempting extensive garden operations. In one garden I saw a number of interesting climbers in full bloom, notably *Bignonia venusta*, *Tecoma grandiflora*, *Bougainvillea glabra*, and one

or two others. Species of *Eucalyptus*, *Acacia*, *Cinnamomum*, *Schinus mollis*, *Pittosporum Tobira*, *Casuarina* spp., *Phoenix* spp. and a few other trees and large shrubs were noticeable but not abundant. The Oleander was the finest flowering shrub at the time of my visit and there were some good bushes of *Hibiscus rosa-sinensis*. One of the commonest climbers was *Ipomoea rubrocoerulea*, and it was flowering freely. In several places I saw good examples of *Magnolia grandiflora*. Public gardens are restricted to small squares about the streets. They are furnished with Date Palms, *Schinus mollis*, Oleanders, *Hibiscus rosa-sinensis*, Acacias, and a few other subjects, with sometimes a carpet of *Achillea Millefolium* in place of grass. This plant is also much used in Barcelona in place of grass, and is propagated by division. The wider streets are lined with trees, notably *Phoenix dactylifera*, *Platanus orientalis*, *Robinia Pseudacacia*, *Ligustrum lucidum*, *Schinus mollis*, and a few *Sophora japonica*. The *Ligustrum* appears to be very popular, both green and variegated. It is encouraged to form a trunk 6-8 feet high and then to form a round head. The Date Palm bears fruit but it does not ripen well.

The chief forest tree in the Island is *Pinus halepensis*, but there is a goodly number of oaks, *Quercus Ballota* and *Q. Ilex*, some elms and occasional trees of *Celtis australis*, *Crataegus Azarolus*, *Pyrus Sorbus*, *Fraxinus* sp., *Pinus Pinea*, etc. The Aleppo Pine, *Pinus halepensis*, is everywhere on uncultivated land. Usually below 50 feet in height, the trunk rarely exceeds 12 inches in diameter, and is often not more than 8 or 9 inches when felled. Natural regeneration appears to be relied upon for reproduction and trees grow under what would appear hopeless conditions, almost upon bare rock where other vegetation is parched up. In some places a good many young trees are to be found, in others they are not plentiful. In some places there are areas of almost pure pine but more often the pines are mixed with oaks and other trees. Beneath the pines there is considerable undergrowth, the shrubs including *Pistacia Lentiscus*, Rosemary, *Cistus* spp., several spiny Leguminous shrubs, two or more species of *Asparagus*, *Arbutus Unedo*, *Myrtus communis*, *Erica multiflora*, here and there *Erica arborea* never very tall, two Lavenders, *Phillyrea angustifolia*, *Juniperus Oxycedrus*, *Smilax aspera* forming with other spiny plants a rare tangle, *Clematis Flammula*, in some parts *Chamaerops humilis*, and *Hypericum balearicum*. The last named was conspicuous as a shapely bush 2-3 feet high and fresh in appearance in spite of the drought that had dried up many other shrubs. The remains of various herbaceous plants were noticed but little could be recognised, except a species of *Veratrum* which seemed to be a weed everywhere. Two bulbous plants were in flower, *Pancratium maritimum*, on the outskirts of the woods in the deep sand of the seashore, and a Squill, *Urginea* sp., probably *U. Scilla*, which was seen in thin woods, with inflorescences of white flowers 3 feet or more long.

The woods are managed on the selection system and very considerable economy appears to be practised. The pines are stripped of their lower branches and the branches are collected and tied in faggots for heating baking ovens. In the same way small wood of other trees and shrubs is saved. There is nothing left to rot. The bark is removed from the pines, collected and sent to the tanneries, of which there are several in the Island. Timber that cannot be utilised in any other way is made into charcoal, for which there is a home demand. Any wood, however, that can be manufactured, be it pine, olive, oak, or anything else, is saved. The oak trees are not very large and are of less importance for timber than the pines. In one place I saw a small plantation of *Platanus orientalis* that was doing very well. The trees had formed long, straight trunks and were very healthy. In some parts of the Island Poplars are also being grown. The two largest trees I saw in the Island were *Celtis australis* in a garden, with a very large head and a trunk over four feet in diameter, and a specimen of *Pinus Pinea* on the road side near Soller which had a very fine long, stout trunk and a shapely head of branches.

In parts where *Chamaerops humilis* is plentiful the leaves are collected and shredded into strips, the strips are then plaited, often by peasants, shepherds and other country people, and the plaits are sold to the hat- and basket-working people in the towns. In some parts where this palm had begun to form a stem the stem had been burnt, apparently to induce a mass of leafy growths from the base.

Two trees which are sometimes thought to be plentiful in the Balearic Islands, *Buxus balearica* Willd., and *Ilex platyphylla* var. *balearica* (*I. balearica* Desf.), are indeed very scarce. I only saw one bush of the Box and did not find the Holly either wild or cultivated. Captain Munn told me of a small grove of the Box growing in the mountains near the Port of Pollensa and we found a locality for the Holly in a Spanish Flora, but so far Captain Munn has not found the plant. Apparently if these species were at any time common they have succumbed in the onward march of cultivation.

From a botanising point of view my visit was ill-timed, being just at the end of the dry season. From the commencement of the rains in September to the beginning of dry weather in May, flowering plants are said to abound, whilst the climatic conditions are ideal, occasional wet days alternating with long sunny intervals.

XLIII.—CONTRIBUTIONS TO THE FLORA OF SIAM.* ADDITAMENTUM XXIII.

Castanola glabrifolia Schellenb., comb. nov. [Connaraceae].

Agelaea glabrifolia Hance in Journ. Bot., xiv. p. 257 (1876).

Chantabun, Lêm Sing, 20 m., scrub jungle, Kerr 6945.

Distr. Cambodia (*type*).

*Continued from K.B., 1927, p. 220.

Connarus Planchonianus Schellenb. [Connaraceae]; species *C. grandi* Jack affinis sed foliolis oblongis ployneuris necnon ovatis sensim acuminatis oligoneuris, staminibus 10 fertilibus folliculisque haud oblique hamatis facile distinguenda.

Frutex scandens, ramis verruculose lenticellatis, novellis subglabris. *Folia* imparipinnata, 1-2-iuga, rhachi 6-20 cm. longa crassa; foliola 7-30 cm. longa, 4-12 cm. lata, oblonga, apice obtuse vel acutius acuminata, basi subrotundata, rigide coriacea, nitida, glabra, supra in siccitate obsolete venosa, subtus tenuiter graciliterque transversim venosa; costae secundariae utrinque 8-9, tenues, patentes, ante marginem obsolete confluentes. *Inflorescentiae* terminales, paniculatae, paniculis ramorum axillarium auctae, multiflorae, ramosae, rhachibus adpresse ferrugineo-tomentosis; flores atro-rubri. *Sepala* 3.5 mm. longa, 2.3 mm. lata, ovalia, subacuta, extus intusque tomentosa, punctata. *Petala* 6 mm. longa, 1 mm. lata, glabra, margine glandulose ciliata, punctata. *Filamenta* longiora glanduligera. *Folliculus* (ut videtur haud bene maturus) ad 4.5 cm. longus, 2 cm. latus, a latere compressus, basi in stipitem crassum 5 mm. longum contractus, apice obsolete apiculatus, sutura dorsali basi concava apicin versus leviter convexa ventrali convexa; pericarpium sublignosum, extus glabrum (glabratum), oblique nervoso-striatum, intus tomentosum; semen (immaturum) arillo basem amplectente dorso vix evoluto lateribus protracto itaque bilobo ornatum.—*C. grandis* Hook. f. in Fl. Brit. Ind. II. p. 53 (1876), Kurz, For. Fl. Brit. Burma, I. p. 328 (1877), atque King in Journ. As. Soc. Beng. LXVI. 2, p. 7 (1897) pro parte, haud Jack.

Chumpawn, Ta Ngaw, 2000., evergreen forest, *Kerr* 11585.

Lower Burma. Tenasserim, *Helper* 1269.

Malay Peninsula. Perak, *King's Collector* 4932, 6178, 7699, 10721, 10793, *Wray* 2370. Malacca, *Griffith* 1268, *Maingay* 504, 505. Singapore, *Wallich Cat.* 8538A (*type*) 8538B ex parte. *Changi, Ridley* 7590.

Castanola villosa Schellenb., comb. nov. [Connaraceae].

Erythrostigma villosum Zoll. in Nat. Tijdschr. Ned. Ind., xiv. p. 175 (1857).

Pulau Rawei (ex *Ridl.*).

Distr. Java (*type*).

Castanola Wallichii Schellenb., comb. nov. [Connaraceae].

Agelaea Wallichii Hook. f. in Fl. Brit. Ind., ii. p. 47 (1876).

Pattani, Banang Sta, 50 m., evergreen forest, *Kerr* 7271.

Distr. Singapore (*type*).

Roureopsis stenopetala Schellenb., comb. nov. [Connaraceae].

Cnestis stenopetala (sphalm. steriopetala) Griff., Not., iv. p. 433 (1854).

Prê, Hui Kammi, 270-300 m., *Kerr* 2349. Pak Chawng, 300 m., *Marcan* 1516.

Distr. Tenasserim (*type*).

Santaloides rubellum Schellenb., comb. nov. [Connaraceae].

Rourea rubella Pierre, Fl. For. Cochinch., t. 379, fig. F (1898).

Sriracha, 5 m., Mrs. D. J. Collins 84, 768.

Distr. Cochinchina (*type*).

Santaloides siamense Schellenb. [Connaraceae]; species nova ad gregem foliolis dense areolatis pertinens, foliolis latioribus subovatis, terminali basem versus cuneato distincta.

Frutex scandens, ramulis puberulis. *Folia* imparipinnata, 1-3-
iuga, rhachi 3-12 cm. longa glabra; foliola 3.5-12.5 cm. longa, 2-5 cm.
lata, elliptica, longe (usque ad 1 cm.) acuminata, basem versus
cuneatim angustata, chartacea, glabra, dense prominulo reticulata,
supra nitidula, subtus opaca et glaucescentia; foliola lateralìa
dimidio paginae superiore producto obliqua; costae secundariae
utrinque circa 5, basilares erectae, ceterae patentes. *Inflorescentiae*
paniculatae, in axillis foliorum fasciculatae, rhachibus circa 5 cm.
longis subglabris; flores albi, fragrantès. *Sepala* 2.5 mm. longa,
1.6 mm. lata, late oblonga, obtusa, glabra, apice barbata, margine
ciliata. *Petala* 6 mm. longa, 2 mm. lata, glabra. *Folliculus*
arcuatus, 2 cm. longus, glaber, tenuiter longitudinaliter striatus,
sutura ventrali dehiscens, basi sepalis accretis 5 mm. longis glabris
arcte cinctus; semen modo generis arillo amplo tenui libero invol-
utum.

Doi Sutep, 1500 m., evergreen forest, Kerr 1771 (*type*). Pa
Miang, Chê Sawm, 1100 m., evergreen forest, Kerr 3109.

Afgekia Craib, gen. nov. [Leguminosae-Galegeae]; a *Millettia*
Wight et Arn. et a *Fordia* Hemsl. cui ovulis duobus simile, inflores-
centia racemosa iuventute comosa, calyce bilabiato lobis conspicuis,
antheris et apice et basi pilosis, legumine turgido lignoso, funiculo
mox elongato indurato distinguendum.

Calyx bilabiatus, labio postico tubo paulo breviorè, lobo infimo
tubo longiorè. *Vexillum* amplum, basi medio callosum et paululo
altius bicallosum; alae oblongae, basi hastatae; carina incurva,
obtusa; petala omnia unguiculata. *Stamen* vexillare ima basi ab
aliis liberum, altius cum aliis connatum, filamentis inter se subae-
quilongis, antheris uniformibus et apice et basi pilosis longitudinaliter
dehiscens. *Ovarium* stipitatum, stylo inflexo terete, stigmate
parvo terminali, ovulis 2. *Legumen* ambitu oblongum, turgidum,
dehiscens, valvis lignosis; semina 2, ambitu orbicularia, paulo com-
pressa, glabra, funiculo elongato duro persistente, hilo elongato
pallido.—*Frutex* volubilis. *Folia* imparipinnata; stipulae conspicuae,
diutius persistentes, basi productae; foliola opposita; stipellae
evolutae, diutius persistentes. *Racemi* axillares, mox folia super-
antes, conspicue bracteati. *Vexillum* et *carina* pilosa.

Afgekia sericea Craib.

Frutex volubilis; ramuli nonnulli aphylli, cirrhiiformes, primo
densius adpresse molliter pilosi, mox fere glabri, teretes, incon-
spicue sulcati, straminei vel brunneo-straminei. *Folia* pinnatim

15-17-foliolata, petiolo 2-3.5 cm. longo incluso 18-22 cm. longa, petiolo basi incrassato cum rhachi indumento ei ramulorum simili tecto supra parum canaliculato, rhachi inferne supra canaliculata apicem versus complanata subalata; stipulae diutius persistentes, dimidio ovatae vel lanceolatae, apice longius acute attenuatae, basi productae, usque ad 20 mm. longae et 5 mm. latae, pagina utraque pilosae, ciliatae; foliola opposita, oblonga vel oblongo-lanceolata, apice longius mucronata, basi inferiora parum inaequalia, superiora aequalia, truncata vel truncato-cordata, 2-5 cm. longa, 1-2.5 cm. lata, chartacea vel coriaceo-chartacea, supra primo subsericea, mox sparse pilosa, subtus sericea, nervis lateralibus utrinque 8-10 supra vix conspicuis subtus subprominentibus, nervulis paucis subtus prominulis, margine densius ciliata, petiolulo 2-3 mm. longo adpresse piloso suffulta; stipellae diutius persistentes, petiolulis aequilongae vel iis paulo breviores. *Racemi* axillares, sub anthesin foliis aequilongi, infructescentes pedunculo communi incluso ad 50 cm. longi, folia longe superantes, pedunculo communi petiolo paulo brevior suffulti, rhachi inferne bracteis sterilibus stipuliformibus instructa, cum pedunculo primo pilis longis divaricatis instructa praetereaque puberula mox lignosa pilosa; bractea deciduae, ante anthesin flores longe superantes, ad 3.5 cm. longae, apice longius attenuatae, pilosae; flores singulati dispositi, pedicellis 5 mm. longis suffulti. *Calycis* bilabiati extra longius pilosi tubus 6 mm. longus, lobi postici approximati, lanceolati, acuti, 4.5 mm. longi, basi 1.5 mm. lati, laterales a posticis sat distantes, lineari-lanceolati, acuti, 7 mm. longi, basi 1.5 mm. lati, antico subulato acuto 8 mm. longo basi 1.5 mm. lato, omnibus longius ciliatis et intra pilosis. *Vexillum* ellipticum, apice breviter acuminatum, basi cordatulum, 22 mm. longum, 17 mm. latum, ungui valido 4 mm. longo suffultum, intra basi medio callo orbiculari concavo instructum et paululo altius bicallosum, intra glabrum, extra longius densius pilosum, margine inferne ciliatum; alae oblongae, basi hastatae, apice rotundatae, 19 mm. (ungui 4.5 mm. longo excluso) longae, 7 mm. latae, apicem versus longius ciliatae; carina, ungui circa 10 mm. longo excluso, 15 mm. longa, apice 15 mm. lata, obtusa, basi in unguem angustata, extra longius pilosa. *Stamina* monadelphae, vexillari ima basi tantum ab aliis libero, filamentis inter se subaequilongis paulo supra antherarum bases insertis, antheris oblongis longitudinaliter dehiscentibus et apice et basi pilosis. *Ovarium* sericeum, circa 4 mm. longum, stipite circa 7 mm. longo suffultum, stylo 21 mm. longo inferne adpresse pubescente, stigmatibus parvo terminali capitato, ovulis 2. *Legumen* lignosum, sat crassum, dehiscens, ambitu oblongum, 7 cm. longum, 3 cm. latum, brunneum, sparse pilosum, pedicello 1.5 cm. longo et stipite 7 mm. longo ambobus lignosis suffultum; semina 2, ambitu orbicularia, paulo compressa, 15 mm. diametro, testa nitida pallide brunnea atro-maculata; hilum seminis partem dimidiam involvens, pallidum; funiculus lignosus, persistens, circa 2 cm. longus.

Korat, *Anuwat* 4 (*type*). Korat, Chantûk, 300 m., savannah, *Kerr* 8057.

Mucuna brevipes *Craib* [Leguminosae-Phaseoleae]; a *M. pruriens* DC. foliolis subtus subadpresse albo-pubescentibus haud sericeis, bracteis oblongo-ellipticis haud lanceolatis recedit.

Caules annui (?), volubiles, primo dense pubescentes, mox plus minusve glabrescentes, striati. *Folia* trifoliolata, petiolo 5–7 cm. longo breviter pubescente basi incrassato suffulta; stipulae deciduae, lineari-lanceolatae, acutae, circa 5 mm. longae; foliola lateralia inaequilateralia, latere superiore dimidio oblanceolata, basi rotundata, inferiore dimidio late ovata, basi truncata, terminali subrhombeo, omnibus apice apiculatis ad 12 cm. longis et 8 cm. latis chartaceis iuventute pagina utraque dense molliter adpresse pubescentibus mox superiore pilis brevibus sparse instructis inferiore pallidioribus pubescentibus vel interdum subadpresse pubescentibus, nervis lateralibus utrinque 6–8 ad marginem currentibus supra conspicuis subtus prominentibus, nervis transversis subtus prominulis, petiolulo circa 5 mm. longo sat valido breviter pubescente suffultis, terminali a lateralibus circa 2 cm. distante; stipellae angustae, petiolulis breviores. *Racemi* apicem versus ramulorum axillares, solitarii vel interdum gemini, pedunculo communi brevi incluso ad 15 cm. longi, pedunculo cum rhachi dense longius fulvo-pubescente; bractae deciduae, oblongo-ellipticae, ad 2.5 cm. longae et 1.2 cm. latae, pagina utraque adpresse cinereo-pubescentes; flores atropurpurei (ex *Kerr*), pedicellis circa 5 mm. longis indumento ei pedunculi simili obtectis suffulti. *Calyx* extra breviter cinereo-pubescentis praeterea pilis longioribus brunneis rigidis instructus, intra adpresse pubescens; tubus 5 mm. longus; lobi postici in unum apice rotundatum 3 mm. longum 5 mm. latum connati, laterales deltoidei, 2.5 mm. longi, 2 mm. lati, antico lanceolato-deltoideo 4.5 mm. longo 3 mm. lato. *Vexillum* late ovatum, apice emarginatum, basi cordatum, ungui brevi incluso 2 cm. longum, 1.6 cm. latum; alae basi latere altero auriculatae vel cordato-auriculatae, altero cum ungui dense ciliatae, ungui 5 mm. longo incluso 3 cm. longae, 9.5 mm. latae; carinae petala basi cordata, apice paulo curvata, ungui 9 mm. longo incluso 4.5 cm. longa, 5.5 mm. lata. *Stamen* vexillare ab aliis liberum, filamentis apicem versus alternatim conspicue latioribus et paulo latioribus summo apice angustatis, antheris alternatim oblongis et brevioribus glabris. *Pistillum* 4 cm. longum, ovario subsessili basi disco breviter tubulari cincto sutura postica praesertim superne longius hirsuto aliter pubescente, stylo apicem versus indurato glabro aliter pubescente, stigmate capitato breviter piloso, ovulis 5–6.

Doi Sutep, 1650 m., climbing over bushes on old clearing, *Kerr* 1572B.

Mucuna gracilipes *Craib* [Leguminosae-Phaseoleae]; a *M. hirsuta* Wight et Arn. floribus multo maioribus recedit.

Caules annui (?), prostrati (ex *Winit*), pilis longiusculis sat rigidis fulvis saepissime reflexis tecti, striati, angulati. *Folia* trifoliolata, petiolo 8-10.5 cm. longo basi incrassato indumento ei caulium simili tecto suffulta; stipulae lineari-oblongatae, acutae, 8 mm. longae, dorso hirsutae, intra glabrae, hirsuto-ciliatae; foliola lateralia inaequilateralia, latere superiore dimidio oblongo-oblongata, basi cuneato-rotundata, inferiore dimidio late ovata, basi truncata, terminali oblongo-elliptico vel oblongo-obovato, omnibus apice rotundatis vel obtusa costa excurrente longius apiculatis 9-13 cm. longis 5.5-9.5 cm. latis chartaceis supra ad costam nervosque laterales albo-hirsutis aliter pilis albis adpressis sparse instructis subtus pallidioribus indumento simili sed paulo longiore et tenuiore instructis, nervis lateralibus utrinque 7 ad marginem currentibus supra conspicuis subtus prominentibus, nervis transversis inter se parallelis subtus prominulis, margine ciliatis saepissime undulatis, petiolulis 3-4 mm. longis fulvo-pilosis suffultis, terminali a lateralibus 1.5-2 cm. distante; stipellae filiformes, petiolulis paulo longiores, apice pilosae. *Racemi* axillares, pedunculo communi gracili 7-12 cm. longo incluso 10-17 cm. longi, pedunculo inferne glabro superne pilis ferrugineis reflexis instructo, rhachi adpresse hirsuta; bractae deciduae, oblanceolato-oblongae, apice acutae, fere 1.5 cm. longae, 8 mm. latae, dorso sparse adpresse hirsutae, intra sparse pubescentes, ciliatae; flores ad nodos gemini, pedicellis circa 1 cm. longis sericeis suffulti. *Calyx* utrinque sericeus praetereaue dorso pilis brunneis rigidis instructus; lobi postici in unum deltoideum apice rotundatum interdum paululo emarginatum 7 mm. longum 10 mm. latum connati, laterales lanceolati, acuti, 5-6 mm. longi, 2.5-3 mm. lati, antice late lanceolati inferne paulo angustato apice acuto 10 mm. longo 4 mm. lato, omnibus ciliatis. *Vexillum* fusco cyaneo-purpureum (ex *Winit*), oblongo-ellipticum, basi auriculato-cordatum, ungui brevi incluso 3.2 cm. longum, 2 cm. latum; alae fusco cyaneo-purpureae (ex *Winit*), suboblongae, basi subtruncatae, apice rotundatae, ungui 2 mm. longo incluso 6.3 cm. longae, 1.3 cm. latae, inferne latere altero albo-ciliatae, altero parce breviter pilosae; carinae albae (ex *Winit*) petala apice curvata, basi auriculata, ungui 6 mm. longo incluso alis subaequilonga, 6 mm. lata. *Stamen* vexillare ab aliis liberum; filamenta superne alternatim conspicue latiora et paulo latiora, apice angustata, antheris alternatim oblongis et brevibus glabris. *Pistillum* 6.5 cm. longum, ovario subsessili suturis albo-pubescente faciebus subglabro basi disco conspicuo cincto, stylo nisi apice indurato adpresse pubescente, ovulis 5-6.

Lampun, Mè Kaw, 250 m., *Winit* 1541

***Pueraria barbata* Craib** [Leguminosae-Phaseoleae]; a *P. stricta* Kurz caulibus conspicue angulatis et ad angulos barbatis recedit.

Caules herbacei, volubiles, conspicue angulati, ad angulos longe et dense brunneo-barbati, aliter pilis paucis longiusculis instructi.

Folia trifoliolata, petiolo 9-13.5 cm. longo supra canaliculato in sulco pilis reflexis adpressis dense tecto lateraliter barbato subtus piloso suffulta; stipulae lanceolatae vel late lanceolatae, basi haud productae, vix 1 cm. longae, costatae, dense pubescentes, diutius persistentes; foliola lateralialia inaequilateralialia, latere altero dimidio lanceolata vel oblanceolata, basi rotundato-cuneata vel subrotundata, altero dimidio subrhombea, basi latissime cuneata vel subtruncata, omnibus apice acute acuminatis usque ad 19.5 cm. longis et 12 cm. latis chartaceis sicco viridibus subtus pallidioribus supra ad costam nervosque densius adpresse albo-hirsutis aliter parce setosis subtus sericeis, nervis lateralibus utrinque 5-6 intra marginem ipsam anastomosantibus cum costa supra conspicuis subtus prominentibus, nervis transversis inter se parallelis supra subconspicuis subtus prominulis, margine cartilagineis ciliatis; petioluli ad 7 mm. longi, densius hirsuti, foliolo terminali a lateralibus ad 3 cm. distante; stipellae persistentes, angustae, petiolulis subaequilongae. *Racemi* axillares, pedunculo communi ad 8 cm. longo incluso ad 23 cm. longi, et pedunculo et rhachi longius longitudinaliter barbatis; bracteae angustae, 5 mm. longae; bracteolae binae, ad pedicelli apicem positae, lineari-subulatae, calycis tubum paululo superantes, parce setosae, ciliatae; pedicelli 2 mm. longi, breviter hirsuti. *Calycis* extra parce hirsuti tubus 2 mm. longus, lobi postici in unum late deltoideum acutum 1.25 mm. longum, 1.5 mm. latum connati, laterales deltoidei, acuti, 1 mm. longi et lati, antico lateralibus simili iisque vix longiore. *Vexillum* subrotundatum, apice retusum, basi auriculatum, ungui 1 mm. longo incluso vix 5 mm. longum, 4 mm. latum, glabrum; alae oblongae, superne paulo latiores, apice rotundatae, basi auriculatae, ungui 1.5 mm. longo incluso 4.5 mm. longae, 1.5 mm. latae; carinae petala basi cordata, vix auriculata, ungui 1.5 mm. longo incluso 4 mm. longa, 1.25 mm. lata. *Stamen* vexillare saltem sub-anthesin ab aliis liberum, filamentis alternatim longioribus et brevioribus. *Ovarium* sessile, 1.75 mm. longum, breviter adpresse hirsutum, stylo pro longitudine valido superne gradatim angustato, stigmatibus capitato, ovulis 6. *Legumen* iuvenile sicco viride, parce plus minusve adpresse hirsutum, ad 4.5 cm. longum et 6 mm. latum, sessile, styli basi persistente apiculatum.

Doi Sutep, 900 m., evergreen forest, *Kerr* 2653.

***Pueraria rigens* Craib** [Leguminosae-Phaseoleae]; species foliis sub anthesin maturis subtus sericeis, stipulis basi haud productis, ramulorum iuvenilium et inflorescentiae indumento ferrugineo distincta.

Ramuli volubiles, lignosi, breviter adpresse ferrugineo-pubescentes, primo angulati, mox teretes. *Folia* trifoliolata, petiolo 2.5-8 cm. longo basi incrassato supra canaliculato dense ferrugineo-vel pallide ferrugineo-pubescente suffulta; stipulae deltoideae, subacutae, 2.5 mm. longae, basi incrassatae, haud productae, indumento ei ramulorum simili tectae; foliola lateralialia inaequi-

lateralis, latere altero dimidio ovata, basi cuneato-rotundata vel truncato-rotundata, altero dimidio lanceolata, terminali ovato, obovato, vel fere rotundato, usque ad 11 cm. longa et 8·7 cm. lata, omnibus apice obtusis vel breviter acute acuminatis chartaceis sicco subtus pallidis supra tenuiter sericeis mox ad costam nervosque tantum adpresse pubescentibus subtus sericeis nervis lateralibus utrinque 8-9 intra marginem ipsam anastomosantibus cum costa supra conspicuis subtus prominentibus, nervis transversis inter se parallelis supra conspicuis, nervulis interdum rete laxum supra conspicuum efficientibus, margine cartilagineo saepe anguste recurvo, petiolulis 4-8 mm. longis dense subadpresse ferrugineo-pubescentibus suffultis, terminali a lateralibus 1-2·3 cm. distante; stipellae 2 mm. longae. *Inflorescentia* axillaris vel terminalis, iuventute spiciformis, pedunculo communi incluso ad 15 cm. longa, floribus purpureis (ex *Kerr*) ramulis brevibus lateralibus gestis, partibus omnibus dense breviter ferrugineo- vel pallide ferrugineo-pubescentibus; bracteae deciduae, vix 3 mm. longae; bracteolae binae, ad pedicelli apicem positae, 1·25 mm. longae, deciduae; pedicelli 2-3 mm. longi. *Calycis* extra adpresse ferrugineo-pubescentis intra sericeo tubus 2 mm. longus, lobi postici in unum apice emarginatum circa 2·5 mm. longum et latum connati, laterales oblongi, 2·25 mm. longi, 1·25 mm. lati, antico lateralibus simili sed paulo longiore. *Vexillum* oblato-rotundatum, apice emarginatum, basi auriculatum, 7 mm. longum, 8 mm. latum, ungui 1·75 mm. longo suffultum; alae basi acute auriculatae, apice oblique emarginatae, suboblongae, 6·5 mm. longae, 3 mm. latae, ungui 2 mm. longo suffultae; carinae petala basi acute auriculata, 7·5 mm. longa, 3·5 mm. lata, ungui 2·5 mm. longo suffulta. *Stamen* vexillare sub anthesin ab aliis omnino liberum; filamenta alternatim longiora et breviora, antheris oblongis longitudinaliter dehiscentibus. *Ovarium* sessile, 5 mm. longum, adpresse hirsutum, stylo terete basi parce hirsuto aliter glabro, stigmate parvo capitato.

Sukotai, Kao Luang, 1100 m., on rocks, *Kerr* 5924.

***Dalbergia errans* Craib** [Leguminosae-Dalbergieae]; ab affini *D. Oliveri* Gamble floribus multo minoribus inter alia recedit.

Arbor circa 15 m. alta (ex *Kerr*); ramuli hornotini sicco fusci, glabri vel saepe pilis paucis ferrugineis cito deciduis instructi, vetustiores cortice cinereo vel brunneo-cinereo tecti, lenticellis conspicuis. *Folia* iuvenilia tantum visa, 7-15-foliolata, petiolo 2-2·5 cm. longo incluso circa 15 cm. longa, petiolo cum rhachi sicco fusco glabro vel subglabro; stipulae cito deciduae, lineares, apiculatae, 7-8 mm. longae, pluricostatae, dorso glabrae, intra sparse pubescentes, apicem versus pauperius ciliatae; foliola ovata, lanceolato-ovata, vel suboblonga, apice rotundata, retusa, basi cuneato-rotundata vel truncata, ad 3 cm. longa et 1·8 cm. lata, sicco iuvenilia fusca, paulo vetustiora viridia, pagina inferiore glabra, superiore primo densius mox sparsius adpresse pubescentia, nervis lateralibus utrinque circa 8 intra marginem anastomosantibus, petiolulo ad

5 mm. longo suffulta. *Paniculae* e ramulis annotinis defoliatis ortae vel saepissime ramulis hornotinis infra folia gestae, circa 6 cm. longae, rhachi cum ramulis et pedicellis sicco fusca et pilis paucis ferrugineis brevibus instructa; flores punicei (ex *Kerr*), pedicellis 3-4 mm. longis suffulti; bracteae bracteolaeque cito deciduae. *Calyx* dorso sparse fulvo-pilosus, intra glaber; tubus 1.75 mm. longus; lobi postici rotundati, 1 mm. longi, 1.5 mm. lati, laterales vix 1 mm. longi, antico circa 2 mm. longo, omnibus ciliatis. *Vexillum* reflexum, ungui 2 mm. longo excluso 7 mm. longum, 7 mm. latum, suborbiculare, apice emarginatum, basi callosum; alae obliquae, basi auriculatae, ungui 1.5 mm. longo incluso 8 mm. longae, 4.5 mm. latae; carinae petala basi auriculata, ungui 1.5 mm. longo incluso 5 mm. longa, 2.75 mm. lata. *Stamina* saepissime isodiadelpa sed in exemplis paucis monadelpa. *Ovarium* 2.5 mm. longum, ad suturas pubescens, stipite circa 2 mm. longo pubescente suffultum, stylo 1.75 mm. longo, ovulis 4.

Lôi, Kao Krading, 800 m., bamboo forest, *Kerr* 8643.

Dalbergia floribunda *Craib* [Leguminosae-Dalbergieae]; species *D. ovatae* Graham habitu similis sed calycis lobis posticis saltem ad medium connatis, lobo antico lateralibus longiore, stylo longiore tenuiore differt.

Arbor circa 10 m. alta (ex *Kerr*); ramuli annotini glabri, cortice cinereo-brunneo striato obtecti, lenticellis angustis vix prominulis. *Folia* 5-7-foliolata, petiolo 2-3 cm. longo incluso 13-20 cm. longa, petiolo cum rhachi terete vel parum angulato glabro; stipulae deciduae; foliola saepissime ovata, late ovata, vel elliptica, apice acuminata, summo apice costa excurrente apiculata, basi late rotundata, rotundata, vel cuneato-rotundata, usque ad 10 cm. longa et 6 cm. lata, coriaceo-chartacea, matura glabra, nervis lateralibus utrinque circa 8 supra conspicuis subtus prominentibus intra marginem anastomosantibus, nervulis rete pagina utraque subconspicuum efficientibus, petiolulo ad 8 mm. longo suffulta. *Paniculae* vel terminales, ad 25 cm. longae et 18 cm. diametro, efoliatae vel minores, axillares, paniculam foliatam terminalem formantes, primo ferrugineo-tomentosae, cito plus minusve glabrescentes; flores luteo-albi (ex *Kerr*), pedicellis 2-2.5 mm. longis suffulti; bracteolae binae, ante anthesin deciduae, apicem versus pedicelli positaе, oblongae vel elliptico-oblongae, apice rotundatae, 2 mm. longae, 1-1.5 mm. latae, dorso ferrugineo-pubescentes. *Calyx* extra sparse ferrugineo-pilosus, intra glaber; tubus 2 mm. longus; lobi laterales cum antico deltoidei, subobtusiusculi, 1.5 mm. longi, 1.25 mm. lati, antico 2 mm. longo et 1.5 mm. lato, postici 1.25 mm. longi, ad medium connati, apice rotundati, omnibus breviter ciliatis. *Vexillum* reflexum, ungui 2 mm. longo incluso 6 mm. longum, 2.25 mm. latum, oblongum vel anguste ellipticum, apice rotundatum, paululo emarginatum; alae ungui 2 mm. longo incluso 5 mm. longae, 1.5 mm. latae, basi truncato-cordatulae; carinae petala ungui 2 mm. longo incluso 5 mm. longa, 2.75 mm. lata, basi longius

obtuse auriculata. *Stamina* monadelpha. *Ovarium* glabrum, vix 2.5 mm. longum, stipite 3 mm. longo sparse pubescente suffultum, stylo cylindrico vix 2 mm. longo, ovulis 2-3.

Prê, Hui Kammi, 200 m., mixed forest by stream, *Kerr* 4845.

Dalbergia verrucosa *Craib* [Leguminosae-Dalbergieae]; ab affini *D. polyphylla* Benth. bracteolis angustis, calyce pubescente maiore recedit.

Frutex volubilis; ramuli primo dense ferrugineo-tomentosi, mox glabri, fusco-corticati, conspicue lenticellati. *Folia* iuvenilia tantum visa, petiolo ad 1.5 cm. longo incluso ad 6 cm. longa, petiolo rhachi et petiolulis indumento ei ramulorum simili tectis; stipulae deciduae; foliola circa 17, oblonga, apice costa excurrente apiculata, basi rotundata vel truncato-cordatula, ad 1.6 cm. longa et 0.6 cm. lata, supra ad costam impressam pilosa, subtus pilosa, nervis obscuris, margine revoluta, petiolulo 1 mm. longo suffulta. *Paniculae* ramis annotinis gestae, pedunculo communi brevi incluso circa 3 cm. longae, 3 cm. diametro, pedunculo rhachi ramulis et pedicellis indumento ei ramulorum simili tectis; bracteae lineares; pedicelli 2 mm. longi, bracteis paululo longiores; bracteolae 2, lineares, ad pedicelli apicem positae, sub anthesin persistentes. *Calyx* extra et superne intra ferrugineo-pilosus, 4 mm. longus, lobis inter se subaequilongis circa 2.25 mm. longis deltoideis vel late deltoideis acutis 1.75-2 mm. latis ciliatis. *Vexillum* refractum, ungui 2.5 mm. longo lamina paulo brevior suffultum; alae oblongae, apice rotundatae, basi latere altero auriculatae, altero obtuse denticulatae, ungui 3 mm. longo incluso 6.5 mm. longae, basi 2 mm. latae; carinae petala basi truncata vel auriculato-truncata, ungui 3 mm. longo incluso 7 mm. longa, 2.25 mm. lata. *Stamina* monadelpha. *Pistillum* glabrum, ovario 3 mm. longo stipite 2 mm. longo suffulto, stylo gracili fere 2 mm. longo, ovulis 2.

Nan, Doi Pu Ka, 1700 m., savannah, *Kerr* 4930.

Derris exserta *Craib* [Leguminosae-Dalbergieae]; species ab aliis asiaticis vexillo bicalloso, filamento vexillari ab aliis libero distincta.

Arbor circa 4 m. alta (ex *Kerr*); ramuli iuventute breviter adpresse ferrugineo-pubescentes, sicco plus minusve fusci, mox glabri, cortice cinereo obtecti, foliorum cicatricibus prominentibus, lenticellis conspicuis numerosis conspicue longioribus quam latioribus. *Folia* sub anthesin iuvenilia, 9-foliolata, petiolo 9.5-13.5 cm. longo incluso 28-52 cm. longa, petiolo basi incrassato cum rhachi supra canaliculato et iuventute densius adpresse ferrugineo-pubescente cito glabro; stipulae circa 2 mm. longae, fugaces; foliola opposita vel subopposita, rarissime alterna, ovata, oblongo-ovata vel late lanceolata, rarius subrotundata, terminali oblongo-oblanceolato, apice rotundata vel obtuse subacuminata, summo apice emarginata, basi cuneata vel rotundata, lateralibus plus minusve sed vix conspicue inaequaliteralia, usque ad 20 cm. longa et 7.7 cm. lata, chartacea, iuvenilia pilis paucis brevibus ferrugineis instructa, sicco fusca, mox

glabra et sicco viridia, nervis lateralibus utrinque 6–10 intra marginem anastomosantibus supra conspicuis vel saepe subprominulis subtus prominentibus, nervulis rete gracile pagina utraque prominulum efficientibus, margine anguste recurva, petiolulo ad 8 mm. longo suffulta, terminali a lateralibus ad 4.5 cm. distante. *Paniculae* ex axillis foliorum delapsorum ortae, iuveniles thyrsoidae, sub anthesin thyrsoidae vel sat latae, pedunculo communi saepissime brevi incluso usque ad 65 cm. longae, ramis lateralibus ad 9 cm. longis flores primo sat approximatos racemosim dispositos gerentibus vel his usque ad 25 cm. longis iterum ramosis ramulis ultimis ad 6 cm. longis; rhachis primo angulata, mox fere glabra, sat valida, brunneo-corticata, lenticellis pallidis angustis conspicuis, iuventute cum ramulis et pedicellis densius adpresse ferrugineo-pubescentibus; bracteae ovatae, 1.5 mm. longae, cito deciduae; bracteolae parvae, etiam cito deciduae; pedicelli 8 mm. longi, indumento ei calycis simili instructi; corolla vexillo pallide viridi excepto alba (ex *Kerr*). *Calyx* 7 mm. longus, extra adpresse ferrugineo-pubescentibus, dentibus parvis, antico et lateralibus postico latioribus. *Vexillum* reflexum, 11 mm. longum, 14 mm. latum, apice emarginatum, basi subcordatum, bicallosum, glabrum, ungui 5 mm. longo apice 5 mm. lato suffultum; alae oblongae, basi obtuse auriculatae, ungui 4 mm. longo incluso 17 mm. longae, fere 5 mm. latae; carina basi truncato-auriculata, ungui 5 mm. longo incluso 17 mm. longa, 5 mm. lata. *Stamen* vexillare ab aliis omnino liberum, filamentis alternatim longioribus et brevioribus, longioribus ad partem liberam dorso puberulis brevioribus glabris, antheris oblongis apiculatis. *Ovarium* 1 cm. longum, stipite 3 mm. longo suffultum, adpresse ferrugineo-pubescentibus, stylo exserto nisi apice breviter ferrugineo-pubescente, stigmate parvo, ovulis 9.

Muang Lôi, 200 m., scrub, *Kerr* 8785.

***Derris reticulata* Craib** [Leguminosae-Dalbergieae]; species nova ramulis lenticellatis, foliis 5-foliolatis, leguminibus brevibus oblongis ambitu alatis ad semina incrassatis et reticulatis distincta.

Frutex scandens; ramuli annotini glabri, conspicue lenticellati, cortice cinereo vel stramineo-cinereo obtecti, mox prominenter lenticellati, pallide brunneo-corticati. *Folia* 5-foliolata, petiolo 1.5–4 cm. longo basi incrassato incluso ad 18 cm. longa, petiolo cum rhachi supra canaliculato glabro; stipulae deciduae; foliola opposita, oblongo-ovata, ovato-lanceolata vel oblongo-lanceolata, lateralia saepissime parum inaequilateralia, acuminata, summo apice retusa vel rotundata, basi rotundata vel cuneata, 5–10 cm. longa, 2–4 cm. lata, subcoriacea vel chartaceo-coriacea, supra subnitida, viridia, subtus pallidiora, matura pagina utraque glabra vel inferiore pilis perpaucis ad costam nervosque laterales instructa, nervis lateralibus utrinque 6–8 intra marginem anastomosantibus supra conspicuis subtus prominulis, nervulis rete gracile pagina utraque efficientibus, petiolulo ad 4 mm. longo supra canaliculato suffulta, terminali a lateralibus ad 1.5 cm. distante; stipellae non

visae. *Legumen* substramineum, oblongum vel anguste oblongum, ad 4 cm. longum, 1·7–2 cm. latum, glabrum, ambitu alatum, ala altera ad 7 mm. lata altera ad 3 mm. lata, ad semina incrassatum et prominenter reticulatum, pedicello circa 7 mm. longo suffultum.

Kanburi, 50 m., climbing on bamboo by stream, *Kerr* 10142.

***Derris truncata* Craib** [Leguminosae-Dalbergieae]; ab affini *D. malaccense* Prain floribus multo minoribus recedit.

Frutex volubilis; ramuli hornotini sicco fusci, pilis brevibus ferrugineis adpressis sparse instructi, lenticellati, annotini glabri, cinereo-corticati, striati, lenticellis prominulis, vetustiores copiose tuberculati. *Folia* iuvenilia tantum visa, 9–11-foliolata, petiolo 7–10 cm. longo incluso 14–20 cm. longa, petiolo cum rhachi indumento ei ramulorum simili tecto cito glabro; stipulae deltoideae, circa 3 mm. longae, dorso adpresse ferrugineo-pubescentes; foliola oblongo-oblancoolata, apice obtuse acuminata, basi cuneata, ad 5·5 cm. longa et 2 cm. lata, tenuiter chartacea, supra glabra, subtus pallidiora, pilis brevibus inconspicuis adpressis instructa, ciliata, nervis lateralibus utrinque 8–11 supra subprominulis subtus conspicuis, nervulis rete gracile sub oculo armato conspicuum efficientibus, petiolulo 5–6 mm. longo supra canaliculato iuventute pilis paucis adpressis ferrugineis instructo suffulta; stipellae deficientes. *Paniculae* thyrsiformes, axillares, ramulis brevibus lateralibus vel terminalibus gestae, foliis breviores, paniculam terminalem foliatam efficientes, pedunculo communi 1·5–4·5 cm. longo cum rhachi indumento ei ramulorum simili tecto suffultae; ramuli laterales circa 5 mm. longi, basi bractea solitaria parva instructi, apice flores 3–4 approximatos gerentes; pedicelli 4 mm. longi, basi parvi-bracteati, apice paulo infra calycem bracteolis duabus parvis oblongis ciliatis sub anthesin persistentibus instructi. *Calyx* 4 mm. longus, lobis posticis approximatis fere obsoletis, lateralibus cum antico brevibus, extra glaber, intra inferne glaber, apice adpresse ferrugineo-pubescent, margine ciliatus. *Vexillum* mox refractum, apice emarginatum, ungui 3 mm. longo excluso 10 mm. longum, 8 mm. latum, ad unguis apicem bicallosum, glabrum; alae anguste oblongae, basi subauriculato-truncatae, apice obtusae, ungui 4 mm. longo excluso 8·5 mm. longae, 2·5 mm. latae; carinae petala suboblonga, basi truncata, ungui 4·25 mm. longo excluso 7 mm. longa, 3·5 mm. lata. *Stamina* monadelpha. *Ovarium* circa 3·5 mm. longum, adpresse ferrugineo-pubescent, in stylum glabrum angustatum, ovulis 2.

Pitsanulok, Nakawn Tai, 300 m., evergreen forest by stream, *Kerr* 8898.

***Pterolobium integrum* Craib** [Leguminosae-Eucaesalpineae]; a *P. micrantho* Gagnep. pinnis subtus haud armatis, foliolis integris, inflorescentia breviori magis rigida, filamentis glabris, ovario villosa, fructu haud glabro recedit.

Frutex vel *arbuscula*, ramulis iuventute crispatis puberulis sulcatis cortice brunneo vel fusco-brunneo obtectis ad petiolorum

bases armatis. *Folia* petiolo 1·5–2 cm. longo incluso 12–17 cm. longa, et petiolo et rhachi primo parce crispatis puberulis, rhachi subtus ad pinnarum bases armata; pinnae 5–8-iugae, 4–6 cm. longae, breviter petiolatae, haud armatae, rhachi parce crispatis puberula; foliola utrinque 7–9, oblonga vel oblongo-obovata, apice rotundata, truncata vel parum retusa, mucronulata, basi lateraliter oblique truncata, valde inaequilateraliter, terminaliter obtuse cuneata, ad 12 mm. longa et 6·5 mm. lata, chartacea, glabra, subtus parvipunctata, costa obliqua supra conspicua subtus prominula, nervis lateralibus obscuris utrinque circa 6 intra marginem anastomosantibus, integra, breviter petiolulata. *Paniculae* et axillares et terminales, ad 10 cm. longae et 10 cm. diametro, et rhachi et ramulis crispatis puberulis; bracteae angustae, circa 2 mm. longae, deciduae; pedicelli circa 4 mm. longi, apicem versus articulati, subglabri. *Sepala* inter se subaequalia, oblonga, apice rotundata, 2·5 mm. longa, 1·5 mm. lata, parce ciliolata, exteriore cucullato. *Petala* alba, inter se subaequalia, 2 mm. longa, 0·75 mm. lata, glabra. *Filamenta* glabra, 3 mm. longa, antheris fere 1 mm. longis. *Ovarium* 1 mm. longum, pubescens, stylo 3·5 mm. longo basi sparse pubescente, ovulis 2. *Fructus* ad 3·6 cm. longus, parte seminifera 1·3 cm. longa 0·8 cm. lata puberula, ala ad 1 cm. lata inferne et ad suturas puberula.

Ratburi, under 50 m., scrub, *Kerr* 9001, *Marcan* 1740, 1774.

Caesalpinia macra *Craib* [Leguminosae-Eucaesalpineae]; a *C. parviflora* Prain pinnis foliolisque paucioribus recedit.

Arbor circa 7 m. alta (ex *Marcan*); ramuli primo breviter tomentelli, teretes, angulati, aculeis 1–2 mm. longis rectis vel reflexis subsparsis armati, lenticellis conspicuis. *Folia* bipinnata, petiolo 1–2 cm. longo incluso 13–26 cm. longa, petiolo et rhachi indumento ei ramulorum simili tectis, rhachi subtus armata, aculeis geminis ad pinnarum bases aliis robustioribus; pinnae 7–11-iugae, oppositae, ad 9 cm. longae, rhachi subtus inferne vel usque ad apicem aculeis geminis reflexis ad foliolorum bases armata; foliola utrinque 6–12, oblonga, apice retusa, basi valde inaequilateraliter, truncata, ad 15 mm. longa et 6 mm. lata, sicco viridia, subtus pallidiora, subtus punctata, ad costam crispatis puberula, aliter fere glabra, supra ad costam similiter puberula, aliter sparse puberula vel mox fere glabra, costa supra conspicua subtus prominente, nervis lateralibus utrinque circa 6 intra marginem anastomosantibus supra parum impressis vel vix conspicuis subtus prominulis, nervulis paucis subtus conspicuis, margine revoluta, pauperius breviter ciliata, subsessilia. *Paniculae* partiales ex axillis foliorum normalium vel redactorum solitariae vel saepius per paria ortae, paniculam foliatam terminalem formantes, ad 20 cm. longae, ramis lateralibus usque ad 15 cm. longis pedunculo communi 4·5–6 cm. longo cum rhachi saepe sparse armato et indumento ei ramulorum simili tecto suffultis; flores lutei (ex *Marcan*), pedicellis circa 6 mm. longis suffulti; bracteae deciduae.

Calycis lobus anticus cucullatus, 5 mm. longus, lobi laterales et postici oblongi, apice rotundati, ad 3.5 mm. longi et 2.25 mm. lati, ciliolati. *Petala* lateralia et antica subaequilonga, obovata, apice rotundata vel parum retusa, breviter unguiculata, ad 5.5 mm. longa et 3.25 mm. lata, postico aliis paulo breviora ungui brevi lato ciliato suffulta. *Stamina* 7 mm. longa, filamentis villosis, antheris parvis. *Ovarium* 2.5 mm. longum, breviter stipitatum, pilosum, stylo 4.5 mm. longo piloso, ovulis 2. *Legumen* ad 4.3 cm. longum et 2 cm. latum, stramineum, ad suturas pilosum, aliter puberulum vel fere glabrum, apice oblique truncatum.

Saraburi, Muak Lek, 200 m., evergreen forest, *Marcan* 1866. Pak Chawng, 300 m., secondary growth, *Marcan* 1532.

***Bauhinia calcicola* Craib** [Leguminosae-Bauhineae]; ab affini *B. Curtisii* Prain foliis subtus haud glabris, floribus minoribus, petalis haud glabris recedit.

Frutex scandens, cirrhusus; ramuli iuventute dense ferrugineo-pubescentes vel sparse griseo-pilosi, mox adpresse griseo-pilosuli, demum glabri, sulcati, rubro-brunnei, lenticellis haud conspicuis. *Folia* ambitu ovata, late ovata, vel oblongo-ovata, basi truncata vel cordata, apice integra, obtusa, emarginata, apiculata vel bilobulata, lobulis ad 1.5 cm. longis obtusis divergentibus, 3.5-8 cm. longa, 2.5-5.5 cm. lata, rigide chartacea, supra pilis brevibus inconspicuis albis sparse instructa, mox glabra, subtus pallidiora, subsparse adpresse pubescentia, e basi 7-nervia, nervis supra conspicuis vel parum impressis subtus prominentibus, nervis transversis subtus conspicuis, petiolo 1-1.7 cm. longo ferrugineo-pubescente suffulta; stipulae deciduae. *Racemi* terminales, primo foliis minoribus duplo longiores, mox ad 17 cm. (pedunculo communi ad 2.5 cm. longo incluso) longi, in ramulis solitarii vel saepius paniculam foliatam terminalem efficientes, rhachi nodosa breviter fulvo- vel griseo-fulvo-pubescente vel tomentella; bracteae deciduae, circa 2 mm. longae; bracteolae parvae, ad pedicelli apicem positae; pedicelli 7 mm. longi, breviter pubescentes; receptaculi tubus circa 1 mm. longus, extra breviter pubescens; alabastra ambitu anguste ovata, obtusa vel breviter obtuse subacuminata, sparse adpresse pubescentia. *Calyx* 3 mm. longus, sub anthesin in segmenta duo fissus. *Petalum* posticum lateralibus subsimile nisi paulo latius, ungui 3 mm. longo incluso 5.5 mm. longum, 2.5 mm. latum; antica ungui 1 mm. longo incluso 4 mm. longa, 1.25 mm. lata, cum aliis dorso pilosa. *Stamina* fertilia 3, filamentis 4 mm. longis glabris. *Discus* circa 0.5 mm. supra staminum insertionem productus, glaber. *Ovarium* glabrum, 2.75 mm. longum, stylo 1.5 mm. longo glabro. *Legumen* rubro-brunneum, glabrum, ad 6 cm. longum et 1.5 cm. latum, valvis tenuibus.

Pattani, Banang Sta, 100 m., climbing over open rocks on limestone hill, *Kerr* 7718.

Bauhinia decipiens Craib [Leguminosae-Bauhineae] ; species nova primo aspectu *B. purpureae* Linn., similis sed volubilis foliis membranaceis, antheris multo longioribus recedit.

Frutex volubilis (ex *Kerr*), cirrhis deficientibus ; ramuli primo ferrugineo-tomentelli, mox puberuli, demum glabri, cortice rubro-brunneo obtecti, lenticellis conspicuis. *Folia* ambitu oblonga vel oblato-oblonga, basi cordata vel truncata, apice ad medium vel vix ad medium bilobata, lobis triangularibus apice rotundatis 1.5–2.5 cm. longis 2.5–5 cm. latis saepissime divergentibus sinu late triangulari, 4.7–11.5 cm. longa, 5.5–11 cm. lata, membranacea, pagina superiore viridia, puberula, inferiore pallidiora, puberula et paucisquamosa, e basi 11-nervia, nervis supra conspicuis subtus subprominentibus, nervis transversis inter se parallelis et sat distantibus supra saepissime obscuris subtus prominulis vel subprominentibus, nervulis rete gracile sub oculo armato pagina utraque conspicuum efficientibus, petiolo 3–4 cm. longo supra late canaliculato crispatis puberulo suffulta ; stipulae deciduae. *Flores* albi, petalo posteriore medio luteo-maculato (ex *Kerr*) ; receptaculi tubus 3 cm. longus, indumento ei calycis simili tectus. *Calyx* spathaceus, 4 cm. longus, dorso dense breviter adpresse pallide ferrugineo-pubescent praeterea squamosus, intra glaber. *Petalum* posticum ovato-oblongum, stipite ciliato 1 cm. longo incluso 5.5 cm. longum, 2.4 cm. latum, aliis conspicue maius, lateralibus infimis paulo maioribus cum iis stipite glabro suffultis, omnibus dorso parce squamosis et pilosis. *Stamina* fertilia 3, filamentis 5.5 cm. longis glabris, antheris linearibus 1.5 cm. longis glabris. *Pistillum* hirsutum et squamosum, ovario paulo ultra 1 cm. longo stipite 2 cm. longo suffulto, stylo 3 cm. longo, stigmate capitato, ovulis 8.

Krat, Baw Rai, 200 m., evergreen forest, *Kerr* 9463.

Bauhinia detergens Craib [Leguminosae-Bauhineae] ; ab affini *B. bassacense* Gagnep., foliis angustioribus longioribus, lobis apice obtusis vel obtuse acuminatis distinguenda, habitu *B. rufae* Graham, similis sed foliorum indumento et petalis longius unguiculatis facile distinguenda.

Frutex scandens, cirrhosus ; ramuli iuventute plus minusve fulvo-tomentosi, mox plus minusve glabrescentes, sulcati. *Folia* ambitu oblongo-elliptica vel rotundato-elliptica, basi cordata, apice ad medium vel ultra medium lobata, lobis triangularibus apice obtusis vel obtuse acuminatis 5–12.5 cm. longis 4.5–6.3 cm. latis, sinu saepe angusto, 7.5–19 cm. longa, 7–14.5 cm. lata, chartacea vel rigide chartacea, supra glabra vel saepissime hic et illic flocculosa, subtus ferrugineo-tomentosa, cito plus minusve glabrescentia, e basi 9-nervia, nervis apice intra marginem anastomosantibus supra conspicuis vel saepe parum impressis subtus prominentibus, nervis transversis inter se parallelis supra conspicuis vel saepe parum impressis subtus prominulis, petiolo 2–5 cm. longo primo ferrugineo-tomentoso suffulta ; stipulae deciduae. *Racemi* oppositifolii, pedunculo communi brevi incluso ad 10 cm. longi,

ferrugineo-tomentosi; bracteae lineares, longius acuminatae, circa 1 cm. longae, deciduae; bracteolae binae, angustae, circa 1 cm. longae, bene infra medium pedicelli insertae; pedicelli 5 cm. longi; alabastra ambitu oblonga, obtuse acuminata, acumine densius pilosa, aliter sparse pilosa; flores sublutei, petalis atro-purpureo-venosis (ex *Winit*). *Calyx* sub anthesin in segmenta duo saepissime fissus, 1 cm. longus, intra glaber, dorso parce pilosus, apice dense ferrugineo-pilosus. *Petala* inter se subaequalia, lamina ovata obtusa basi truncata vel cordato-truncata fere 1 cm. longa 7-8 mm. lata utrinque sed praesertim dorso pilosa, ungui 1.5-2.5 cm. longo breviter piloso. *Discus* haud productus. *Stamina* fertilia 2; filamenta 2.3 cm. longa, parce pubescentia, antheris 2.5 mm. longis; staminodia glabra. *Ovarium* circa 7 mm. longum, cum stipite 4 mm. longo dense fulvo-pilosum, stylo 1 cm. longo apicem versus glabro inferne fulvo-piloso, ovulis 6. *Legumen* iuvenile pedicello lignoso 7 cm. longo et stipite 5 mm. longo suffultum, 12.5 cm. longum, 3.2 cm. latum, styli basi persistente acuminatum.

Lampang, Mûang Lawng, 210 m., open mixed forest, *Winit* 1240.

***Bauhinia media* Craib** [Leguminosae-Bauhineae]; a *B. comosa* Craib foliorum lobis apice rotundatis, bracteis brevioribus, petalis longius unguiculatis, a *B. Harmsiana* Hoss., petiolis pedicellis et receptaculi tubo longioribus, floribus maioribus, ovario longius stipitato recedit.

Frutex scandens, cirrhosus; ramuli iuventute ferrugineo- vel griseo-tomentosi, mox glabri, cortice brunneo vel fusco-brunneo obtecti, conspicue lenticellati. *Folia* saepissime ambitu subquadrata, basi truncata, interdum acuminata vel rotundato-truncata, apice bilobulata, lobulis apice rotundatis circa 5 mm. longis, saepissime divergentibus sinu triangulari, 2.5-6 cm. longa, 3.3-7 cm. lata, rigide chartacea, matura supra glabra, subtus pilis brevibus ferrugineis adpressis instructa, e basi 7-9-nervia, nervis supra conspicuis subtus prominulis, reticulatione gracili sub oculo armato pagina utraque conspicua, petiolo 2-3 cm. longo, indumento ei ramulorum simili tecto vel glabro suffulta; stipulae deciduae. *Racemi* et terminales et ex axillis foliorum superiorum orti, simplices vel furcati, pedunculo communi petiolo subaequilongo vel eo paulo breviorre incluso ad 11 cm. longi, et pedunculo et rhachi ferrugineo-tomentosis; bracteae lineari-lanceolatae, acutae, circa 2 mm. longae, alabastra iuvenilia paululo superantes, ferrugineo-pubescentes, deciduae; bracteolae binae, circa 1.25 mm. longae, pedicelli medium versus insertae; pedicelli 4-5 mm. longi, cum receptaculi tubo 3 mm. longo ferrugineo-pubescentes; alabastra anguste ovoidea vel ellipsoidea, obtuse acuminata, adpresse ferrugineo-pubescentia. *Calyx* 4.5 mm. longus, sub anthesin reflexus, saepissime in segmenta duo apice cucullata fissus, extra pilis ferrugineis instructus, intra glaber. *Petala* 5, inter se subaequalia, oblanceolata, apice obtusa, basi in unguem attenuata,

ungui 3-4 mm. longo incluso 7-7.5 mm. longa, 1.5 mm. lata, inferioribus dorso apice pilosis aliter glabris, aliis glabris. *Stamina* fertilia 3, filamentis 9.5 mm. longis glabris, antheris 2 mm. longis glabris. *Ovarium* 3 mm. longum, stipite 2 mm. longo suffultum, stylo 1.5 mm. longo glabro, et ovario ad suturas et stipite pilis paucis ferrugineis longis instructis cito glabris, ovulis circa 8.

Korat, Chantuk, Kao Sisiat A, Noe 103.

Bauhinia pulla Craib [Leguminosae-Bauhineae]; species nova foliis bilobulatis, racemis terminalibus subsessilibus densifloris sicco fuscis, receptaculi tubo brevi, petalis utrinque pubescentibus staminibus fertilibus 3, pistillo pubescente distincta.

Frutex scandens; ramuli primo dense ferrugineo-pubescentes, mox glabri vel fere glabri, fusco-corticati, striati vel fere sulcati. *Folia* ambitu elliptica vel ovato-elliptica, basi cordata, apice ad medium bilobata, ad 11.5 cm. longa et 9.5 cm. lata, lobis apice obtusis interdum subacuminatis, sinu triangulari, chartacea, supra sicco fusca, nitida, matura glabra vel subglabra, subtus pallidiora, primo dense adpresse fulvo-pubescentia, matura ad nervos adpresse pubescentia, aliter glabra vel sparse adpresse pubescentia, 9-11-nervia, nervis supra conspicuis vel parum impressis subtus prominentibus, nervis transversis subtus prominulis, petiolo 2-3 cm. longo indumento ei ramulorum simili tecto suffulta; stipulae deciduae, falcatae, circa 5 mm. longae, dorso adpresse pubescentes, intra glabrae. *Racemi* terminales, ad 19 cm. longi, subsessiles vel pedunculo brevi suffulti, rhachi sulcata dense fulvo-pubescente, nodis prominentibus; flores virides (ex Kerr), singulatim dispositi, pedicellis 6 mm. longis adpresse pubescentibus suffulti; bracteae deciduae; bracteolae 2, angustae, 5 mm. longae, adpresse pubescentes, apicem versus pedicelli positae; receptaculi tubus circa 2 mm. longus, vix a pedicello distinctus. *Sepala* 5, oblonga vel oblongo-lanceolata, apice rotundata vel obtusa, 5 mm. longa, 3 mm. lata, libera vel saepissime basi inter se breviter connata. *Petala* 5, oblanceolata vel oblongo-oblanceolata, apice rotundata, basi cuneata, ad 1.3 cm., ungui 4 mm. longo incluso, longa et 4 mm. lata, extra adpresse hirsuta, intra brevius adpresse pubescentia. *Stamina* fertilia 3, filamentis 1.6 cm. longis glabris, staminodiis brevibus evolutis. *Ovarium* 5 mm. longum, fulvo-hirsutum, stipite vix 4 mm. longo antice indumento simili tecto postice fere glabro suffultum, stylo ovario paulo longiore eique similiter tecto, ovulis numerosis.

Saraburi, Muak Lek, 200 m., evergreen forest, Kerr 9155.

Bauhinia sepis Craib [Leguminosae-Bauhineae]; ab affini *B. lakhonense* Gagnep. receptaculi tubo longiore, petalis maioribus haud glabris recedit.

Frutex scandens, cirrhosus; ramuli primo rufo-pubescentes, costati, demum puberuli vel glabri, virides vel rubri, lenticellis haud conspicuis. *Folia* ambitu saepissime suboblato-rotundata,

basi cordata, apice ad medium vel paulo ultra medium bilobata, lobis apice rotundatis ad 2 cm. longis et latis, sinu angusto, ad 4 cm. longa et 5 cm. lata, chartacea, supra viridia, primo pilis ferrugineis sparse instructa, mox glabra, subtus ferruginea, primo praesertim ad nervos ferrugineo-pubescentia, indumento plus minusve persistente, nervis e basi II supra conspicuis vel subconspicuis subtus prominentibus, nervis transversis paucis subtus conspicuis, petiolo 1.5–2 cm. longo indumento ei ramulorum simili tecto suffulta; stipulae lineares, circa 3 mm. longae, saepissime deciduae, paucis tantum persistentibus, erectae vel reflexae. *Racemi* folia paulo vel duplo superantes, ferrugineo-pubescentes, pedunculo communi petiolo subaequilongo suffulti; bracteae angustae, 3 mm. longae, deciduae, ferrugineo-pubescentes; pedicelli 1 cm. longi, rufo-pubescentes, medio bracteolis duabus suboppositis angustis 4 mm. longis rufo-pubescentibus instructi; receptaculi tubus 2.5 cm. longus, costatus, rufo-pubescentis, in pedicellum subitius angustatus. *Sepala* 5, sub anthesin reflexa, inter se plus minusve libera, oblonga, apice acuta vel acuminata, 5.5 mm. longa, 2 mm. lata, intra glabra, dorso sparse breviter rufo-pubescentia. *Petala* subelliptica, apice rotundata, ungui brevi vel vix distincto incluso 10 mm. longa, 6.5–8 mm. lata, intra glabra, dorso medio sparse sed conspicue longius pilosa. *Stamina* fertilia 3, filamentis 9 mm. longis glabris, antheris 2.75 mm. longis, staminodiis evolutis ad 3 mm. longis. *Pistillum* glabrum, 5 mm. longum, stigmatibus discoideo, ovulis circa 17. *Legumen* rubescens, 13 cm. longum, 2 cm. latum, valvis reticulatis subtenuibus.

Nakawn Panom, 200 m., hedgerow, *Kerr* 8429.

Bauhinia similis *Craib* [Leguminosae-Bauhineae]; ab affini *B. involucellata* Kurz ovario dense griseo-pubescente haud glabro differt.

Frutex scandens, cirrhosus; ramuli primo dense breviter molliter griseo- vel ferrugineo-pubescentes, mox velutini, sulcati. *Folia* ambitu late ovata vel subrotundata, basi truncata vel saepius late cordata, apice paulo ultra medium bilobata, lobis subtriangularibus obtusis ad 4.5 cm. longis et 3.8 cm. latis saepissime divergentibus, ad 7.5 cm. longa et 7 cm. lata, chartacea, supra primo velutina, matura glabra vel fere glabra, subtus pallidiora, iuventute sericea vel dense adpresse ferrugineo-pubescentia, matura breviter adpresse pubescentia, nervis a basi II–III supra conspicuis subtus prominentibus, nervis transversis subtus prominulis, nervulis rete gracile pagina utraque sub oculo armato conspicuum efficientibus, petiolo ad 1.7 cm. longo densius ferrugineo-pubescente suffulta; stipulae deciduae. *Racemi* vel axillares vel terminales, breviter pedunculati, simplices et pauciflori, foliis breviores vel saepius bifidi et mox foliis multo longiores, interdum pauci-ramosi et paniculam terminalem formantes; bracteae deciduae; bracteolae etiam deciduae, medium versus vel paulo infra medium pedicelli insertae; pedicelli 3.5–4 cm. longi, dense breviter pubescentes; alabastra sericea,

ambitu suboblonga, apice obtuse apiculata; receptaculi tubus calyce dimidio brevior, costatus, indumento ei pedicelli simili tectus. *Calyx* circa 1.2 cm. longus, sub anthesin saepissime in segmenta dua fissus, extra breviter adpresse pubescens, intra subglaber. *Petala* pallide viridia (ex *Kerr*), lamina oblanceolata vel oblongo-oblanceolata apice rotundata circa 15 mm. longa et 7.5 mm. lata utrinque pilosa basi in unguem 10–13 mm. longum parce pilosum cuneatim angustata. *Stamina* fertilia 2–3, filamentis puniceis (ex *Kerr*) 3 cm. longis parce pilosis. *Pistillum* dense pubescens, ovario circa 6 mm. longo, stylo 12 mm. longo, stipite ovario paulo longiore.

Saraburi, Muak Lek, 200 m., *Kerr* 10007, *Marcan* 1860.

***Bauhinia subsessilis* Craib** [Leguminosae-Bauhineae]; habitu *B. loranthae* Pierre ex Gagnep *ex descr.* similis sed staminibus fertilibus 3 tantum, ovario hirsuto inter alia differt.

Frutex volubilis, ecirrhusus; ramuli iuventute rufo-tomentosi praetereaque pilis sparsis longiusculis divergentibus instructi, annotini cortice brunneo vel fusco-brunneo obtecti, conspicue lenticellati. *Folia* ambitu rotundata vel oblato-rotundata, basi cordata, apice vix ad medium (saepissime ad partem trientem) bilobata, lobis apice rotundatis 2.5–5 cm. longis 3.5–6 cm. latis sinu triangulari, usque ad 12 cm. longa et 13 cm. lata, subcoriacea, pagina superiore puberula, inferiore praesertim ad nervos crispatis ferrugineo-pubescentia, e basi 13–15 -nervia, nervis supra conspicuis subtus prominentibus, nervis transversis inter se parallelis et sat distantibus supra interdum conspicuis subtus prominulis, petiolo 2–3.5 cm. longo indumento ei ramulorum simili tecto supra canaliculato suffulta; stipulae deciduae. *Racemi* terminales, usque ad 10 cm. longi, breviter pedunculati, rufo-tomentosi; bractee deciduae, lanceolatae, acutae, 4 mm. longae; pedicelli 7 mm. longi, rufo-tomentosi, basi vel saltem infra medium bibracteolati; receptaculi tubus 3 cm. longus, sulcatus, rufo-tomentosus, in pedicellum angustatus; alabastra cylindrica. *Calyx* receptaculi tubo subaequilongus, extra rufo-tomentosus, intra glaber, sub anthesin unilateraliter fissus, sepalis inter se cohaerentibus. *Petala* alba (ex *Kerr*), inter se subaequilonga, ungui brevi incluso 5–5.5 cm. longa, 1–2 cm. lata, postico aliis latiore, lanceolata vel oblongo-lanceolata, apicem versus angustata, basi in unguem cuneata, dorso pauci-squamosa. *Stamina* fertilia 3, filamentis glabris paulo ultra 5 cm. longis, antheris 1 cm. longis. *Ovarium* hirsutum, circa 1 cm. longum, stipite vix 2 cm. longo pilis longiusculis divaricatis sparse instructo et parce squamoso suffultum, stylo 5 cm. longo parce squamoso et inferne parce piloso, ovulis 4.

Kaw Chang, Klawng Mayom, under 10 m., scrub, *Kerr* 9207.

***Acacia siamensis* Craib** [Leguminosae-Mimoseae]; ab affini *A. Myaingii* Lace foliolis maioribus inter alia recedit.

Arbor circa 8–20 m. alta (ex *Kerr*); ramuli annotini glabri, cortice rubro-brunneo vel fusco obtecti, striati, conspicue lenticellati, spinis geminis rectis oblique prorsus directis ad 8 mm. longis armati, internodiis haud armatis. *Folia* petiolo 1.5–3.5 cm. longo incluso ad 8 cm. longa, petiolo et rhachi sicco stramineis supra plus minusve canaliculatis glabris, petiolo eglanduloso, rhachi apice inter pinnarum ultimarum bases glandula parva sessili circulari instructa; pinnae 1–3-iugae, oppositae vel haud rarius suboppositae, 4–8 cm. longae, rhachi straminea glabra supra canaliculata ad foliolorum bases saepe parvi-glandulosa; foliola utrinque 4–7, opposita, suboblunga, basi oblique cuneata vel latere altero cuneata, altero rotundata, apice oblique rotundata, truncata, vel retusa, mucronulata, 1.5–2.9 cm. longa, 0.4–1.3 cm. lata, subcoriacea, sicco viridia, glabra, costa obliqua supra conspicua subtus prominula, e basi 3–5-nervia, nervis supra subconspicuis subtus prominulis, nervulis subtus prominulis, breviter petiolulata. *Capitula* in paniculis ramis puberulis disposita; flores deficientes. *Legumen* ad 12.5 cm. longum, et 1 cm. latum, glabrum, sicco stramineum, valvis subcarnosis.

Buriram, Nang Rawng, 100 m., savannah, *Kerr* 8221.

Nimiria *Prain* mss. [Leguminosae-Mimoseae]; genus novum ab *Acacia* Willd., pedunculis medio bracteatis, filamentis basi plus minusve inter se connatis, leguminis valvis elastice secedentibus differt.

Nimiria siamensis *Craib* [Leguminosae-Mimoseae]; ab affini *N. inopinata* (Prain) ramulis pallidioribus armatis, legumine breviori inter alia differt.

Frutex circa 2.5 m. altus (ex *Kerr*); ramuli iuventute parce puberuli, sicco fusci, cito glabri, cortice rubro-cinereo conspicue parvi-lenticellato obtecti. *Folia* bipinnata, petiolo incluso 6–12 cm. longa; petioli 7–10 mm. longi, supra canaliculati, paulo supra medium glandula prominente ambitu elliptica rarissime etiam glandula minore addita instructi; rhachis supra canaliculata, apice glandulis 2–3 ad pinnarum superiorum bases instructa; pinnae utrinque 10–11, oppositae, ad 4 cm. longae; foliola utrinque circa 30, linearia, apice obtusa, basi truncata, circa 5 mm. longa et 1 mm. lata, subtus pallidiora, costa subcentrali pagina utraque conspicua, nervis lateralibus paucis subtus subconspicuis; stipulae spinescentes, 0.6–2.2 cm. longae, rectae vel saepissime parum decurvatae. *Capitula* in racemos axillares paniculam terminalem formantes disposita, infructescentia pedunculo 1 cm. longo paulo infra medium bracteato suffulta. *Legumen* anguste oblongum, suturis anguste alatum, paulo curvatum, apice obtusum, styli basi persistente obliqua, 5.5–9 cm. longum, 1.6–1.8 cm. latum, stipite ad 1 cm. longum suffultum, brunneo-stramineum, glabrum, valvis tenuibus sat duris elastice secedentibus; semina 13–15, ambitu

oblonga, 5 mm. longa, 2.5 mm. lata, glabra, funiculo circa 4 mm. longo apice torto suffulta, hilo parvo circulari.

Kanburi, Sisawat, 150 m., open deciduous forest, *Kerr* 10180.

Pithecolobium conspicuum *Craib* [Leguminosae-Mimoseae]; species nova pinnis 1-iugis, foliolis inter maiora, petiolo paulo infra medium glandula permagna instructo distincta.

Arbor ad 8 m. alta (ex *Kerr*); ramuli iuventute pilis brevibus ferrugineis adpressis hic et illic instructi, angulati, sicco fusci, cito glabri, mox cortice plus minusve brunneo obtecti, lenticellis haud conspicuis. *Folia* bipinnata, petiolo ad 11 cm. longo iuventute pilis brevibus ferrugineis adpressis tecto cito glabro striato supra parum canaliculato 3-4.5 cm. supra basem glandula ambitu elliptica 8-10 mm. longa 4 mm. alta concava instructo suffulta; pinnae 1-iugae, ad 35 cm. longae, petiolulo 4-6 cm. longo eglanduloso suffultae, rhachi etiam eglandulosa cum petiolulo indumento ei ramulorum simili tecta; foliola opposita, 3-4-iuga, oblongo-oblongolata, apice acuminata, basi inaequilateralia, latere inferiore cuneata, superiore subtruncata vel cordatula, usque ad 23 cm. longa et 9 cm. lata, chartacea, iuventute indumento ei ramulorum simili instructa, cito glabra, nervis lateralibus utrinque 11-14 intra marginem anastomosantibus cum costa supra conspicuis subtus prominentibus, nervis transversis supra conspicuis vel subconspicuis subtus prominulis, petiolulo 3-5 mm. longo suffulta. *Capitula* vel supra-axillaria, 4-6 lineatim fasciculata, vel in paniculas racemiformes vel terminales vel e ramulis defoliatis ortas ad 28 cm. longas pedunculis fasciculatis disposita, pedunculis ad 3.5 cm. longis suffulta, et rhachi et pedunculis iuventute indumento ei ramulorum simili tectis; flores albi (ex *Kerr*), sessiles; bractee 0.75 mm. longae. *Calyx* 3 mm. longus, apice denticulatus, extra inferne subglaber, superne pilis brevibus fulvis sparse instructus. *Corolla* 7.5 mm. longa, fere ad medium lobata, lobis oblongis obtusis ad 1.75 mm. latis, dorso superne pilis brevibus fulvis adpressis instructa. *Filamenta* basi ad 4 mm. inter se connata. *Ovarium* 2 mm. longum, cum stipite 2 mm. longo glabrum; stylus 11 mm. longus, tenuis, glaber; ovula circa 14.

Kanburi, Baw Noi, 700 m., evergreen forest, *Kerr* 10252.

Pithecolobium tenue *Craib* [Leguminosae-Mimoseae]; species nova ramulis armatis, petiolis alatis, pinnis 1-iugis 4-6-foliolatis, leguminis valvis tenuibus distinguenda.

Arbor circa 5 m. alta (ex *Kerr*); ramuli glabri, iuventute flexuosi, conspicue angulati vel fere subalati, cortice rubro vel viridi-rubro mox cinereo-brunneo obtecti, lenticellis mox conspicuis, stipulis spinescentibus ad 4 mm. longis rectis prorsus directis armati. *Folia* bipinnata, petiolo 1.3-2 cm. longo viridi-alato glabro apice glandula circulari stipitata suffulta; pinnae 1-iugae, rhachi 2-5 cm. longa viridi-alata glabra vel supra medio parce crispatis puberula subtus parcissime puberula supra saltem apice

inter foliola terminalia glandula circulari instructa vel saepe etiam inter foliola inferiora similiter glandulosa; foliola utrinque 2-3, opposita, subrhombea, apice obtusa, apiculata, basi inaequilateralia, latere superiore cuneata, inferiore rotundato-cuneata, inferiora 1.5-2.7 cm. longa, 0.8-1.5 cm. lata, terminalia ad 9 cm. longa et 4.7 cm. lata, chartacea, sicco viridia, supra ad costam pauperius puberula, subtus subglabra, nervis lateralibus utrinque 6-7 intra marginem anastomosantibus supra subconspicuis subtus prominentibus, nervulis subtus prominulis, sessilia. *Inflorescentia* terminalis, rhachi flexuosa saepius simplice conspicue angulata armata glabra, pedunculis 2-4-fasciculatis 1-2 cm. longis glabris apice bracteatis, capitulis e floribus 3 sessilibus constitutis; alabastra glabra. *Calyx* 2.5 mm. longus, lobis deltoideis subacutis tubo dimidio brevioribus. *Corolla* 6 mm. longa. *Filamenta* circa 17 mm. longa. *Ovarium* 2 mm. longum, glabrum, stipite 1 mm. longo suffultum. *Legumen* sicco rubro-brunneum, ad 23 cm. longum et 2.3 cm. latum, inter semina parum constrictum, valvis tenuibus reticulatis glabris, basi angustatum, stipite vix 1 cm. longo suffultum.

Kampéngpet, Mè Lamung, 500 m., scrub jungle by river, *Kerr* 6095.

XLIV.—THE TYPE OF *VERONICA TRAVERSII*.

V. S. SUMMERHAYES.

Veronica (Hebe) Traversii was first described by J. D. Hooker in 1864 (*Handb. N.Z.Fl.* 208), the species being based primarily on specimens collected by Travers in Canterbury Province. With these specimens were cited others collected in the Southern Alps by Haast and also two specimens from Otago collected by Hector and Buchanan.

In 1873 Masters (*Gard. Chron.* 1873, p. 1046) identified certain cultivated plants as *V. Traversii* but unfortunately we have no specimens available of these. In 1878, however, Hooker figured in the *Botanical Magazine* (t. 6390) a cultivated plant known at that time as *V. Traversii*, which was presumably the same as the plants dealt with by Masters.

Hooker mentions in his original description that the corolla-tube varies in length, stating that it is from 2-5 times as long as the calyx.

In the *Manual of the New Zealand Flora*, Ed. i, Cheeseman, who had realised that a number of different plants were included under the name *V. Traversii*, adopted as the type of the species the form with short corolla-tube figured in the *Botanical Magazine*, while he apparently gave the varietal name *elegans* to those specimens with a longer corolla-tube.

An examination of the material which Hooker had available in 1864, however, shows that the form with the long corolla-tube was

undoubtedly Hooker's type of the species. At Kew there are 6 specimens collected by Travers from Canterbury with long corolla-tubes while there are an equal number, also collected by Travers, with short ones. A careful comparison of these two sets of plants with Hooker's description reveals three points in which it agrees with the "long corolla" forms while not agreeing with the others, while there is no single character in which the reverse is the case.

In the form with short corolla-tubes, the tube is either equal to or up to twice as long as the calyx, whereas the description states that the tube is 2-5 times as long as the calyx. The sepals themselves are about 2 mm. long in the short-tubed forms, while the description says 1.5 mm. long. Finally the fruit can only have been described from the long-tubed form (a specimen collected by Sinclair and Haast), since there are no fruits present on any of the short-tubed specimens. Furthermore the capsule of the plant figured in the Botanical Magazine is only 2-2½ times as long as the calyx instead of 3-4 times.

Hooker's original description of the species therefore was drawn up from the long-tubed specimens and not from those with short corolla-tubes, and is a satisfactory description of the type.

As further evidence that Hooker regarded the long-tubed forms as typical, it may be remarked that he wrote up the short-tubed specimens as "*V. Traversii?*", as if he were not sure of the accuracy of his determination at some point in the investigation.

There seems to be no doubt that the short-tubed specimens represent two or more distinct species, for as pointed out by Cockayne and Allan (Trans. N.Z. Inst. lvii. 29: 1927), they do not agree among themselves. All the long-tubed specimens of *V. Traversii* Hook. f., on the other hand, seem to belong to a well-marked and constant species which appears to be confined to Canterbury Province. An interesting point in distinguishing the species in the Herbarium lies in the fact that true *V. Traversii* dries light brownish-green, whereas the short-tubed forms usually dry nearly black or in any case a much darker brown.

In accordance with modern views *Veronica* sect. *Hebe* Benth. is here given independent generic rank. The shrubby Veronics form a very natural group distinguished not only by their habit and austral distribution, but by the capsule being compressed parallel to the septum and dehiscing septicidally. They constitute the genus *Hebe* Commers. ex Juss., which is now recognised as generically distinct from *Veronica* L. by Pennell, who has made extensive studies in the family *Scrophulariaceae*, and by representative New Zealand botanists such as W. R. B. Oliver, L. Cockayne and H. H. Allan.

From the mixture of short-tubed forms it is possible to separate the species figured by Hooker in Bot. Mag. t. 6390, to which it is proposed to give the name *Hebe brachysiphon* in allusion to the short corolla-tube. The species is well described by Hooker except that

sometimes the capsule is up to $2\frac{1}{2}$ times as long as the sepals while the sepals are often less rounded at the apex. A number of wild specimens in the Kew Herbarium can be referred to this species, the distribution being Nelson, Marlborough, Canterbury and Otago (northern part) Provinces.

The short-tubed specimens collected by Travers in Canterbury Province should probably be referred to *Veronica darwiniana* Col., as they apparently had glaucous leaves while the throat of the corolla is hairy within. They agree fairly well with Colenso's type of that species, but are quite different from *H. brachysiphon*.

The following clavis summarises the floral differences between *Hebe Traversii* and *H. brachysiphon*.

Sepala 1.5 mm. longa. Corollae tubus gracilis, cylindricus, sepalis 2-5-plo longior. Capsula 5 mm. longa, sepalis 3-4-plo longior1. *H. Traversii*

Sepala 2-3 mm. longa. Corollae tubus amplius, sursum sensim dilatatus, sepalis aequans vel iis usque ad duplo longior. Capsula 5-6 mm. longa, sepalis 2-2½-plo longior.....2. *H. brachysiphon*

The synonymy of the two species is as follows :—

1. ***Hebe Traversii*** (Hook. f.) Cockayne & Allan in Trans. N.Z. Inst. lvii. 29 (1927).

Veronica Traversii Hook. f. Handb. N.Z. Fl. 208 (1864), sensu restricto ;

V. Traversii var. *elegans* Cheesem. Man. N.Z. Fl. ed. i. 518 (1906), ed. ii. 804 (1925).

SOUTH ISLAND. Canterbury Prov. : Hurunui Mts., 900-1200 m., *Travers* (lectotype*) ; river banks, 300 m., *Travers* 3, 4, 7, 8 ; Valley of Selwyn, on grass flats and hill sides, 450-900 m., Jan. 1864, *Haast* 26 ; Gorge of Waimakariri, on island, 300 m., Jan. 1864, *Haast* 13 ; without definite locality, 1860-61, *Sinclair & Haast* ; Broken River, *T. Kirk* 631 ; no definite locality, *T. Kirk* 1044 ; Craigieburn Mts., 750 m., *Cheeseman* 1574.

2. ***Hebe brachysiphon*** *Summerhayes*, nom. nov.

Veronica Traversii Masters in Gard. Chron. 1873, 1046 ; Hook. f. Bot. Mag. t. 6390 (1878) ; Cheesem. Man. N. Z. Fl. ed. i. 518 (1906), et ed. ii. 804 (1925), excl. var. *elegans* ; non Hook. f. (1864).

SOUTH ISLAND. Canterbury Prov. : Craigieburn Mts., 750 m., *Cheeseman* 1575. Nelson Prov. : Lake Rotoiti, *Cheeseman* 1569 ; Clarence Valley†, 750 m., *T. Kirk* 1577. Otago Prov. : Lake Wakatipu, *Petrie* 1578.

*When an author in publishing a new name cites two or more specimens under it without indicating which is the type, one of them may be chosen subsequently, and is then termed the *lectotype* (selected type). For this and other terms for types see Bull. U.S. Nat. Mus. No. 53, part 1 (1905) ; Ann. Mag. Nat. Hist. xvi. 102-104 (1905) ; Journ. Bot. 1923, 137.

†This locality appears to be in Marlborough or Canterbury Province but is labelled Nelson in Cheeseman's writing.

CULTIVATED : From Sir J. D. Hooker's garden, March-June 1893. (Type). Edinburgh Bot. Garden, Aug. 1893 ; Royal Botanic Gardens, Kew, Sept. 1882 ; July 1890 ; Aug. 1927.

XLV. MISCELLANEOUS NOTES.

The following appointments have been made by the Secretary of State for the Colonies : Mr. C. O. OATES, Assistant Agricultural Officer, Kenya ; Mr. B. F. MARTIN, Agricultural Officer, Uganda ; Mr. J. G. REYNARD, Superintendent, Agricultural Department, Nigeria ; Mr. C. L. NEWMAN, B.Sc., Agricultural Field Officer, Federated Malay States.

ARTHUR EVERETT SHIPLEY.—We record with very deep regret the death of Sir Arthur Shipley, G.B.E., F.R.S., which occurred at the Lodge, Christ's College, Cambridge, on September 22nd.

Sir Arthur was a frequent correspondent of Kew, and one of his earliest papers, on " Beetles destructive to Rice Crops in Burma," was published in the Kew Bulletin, 1889, p. 13. Sir Arthur could always be relied upon for help and advice in any matter of scientific importance which came within his more special fields of knowledge, and in many indirect ways through his wide experience and extensive acquaintance with men and affairs he was able to help forward matters of botanical as well as of zoological interest.

He came more intimately in touch with Kew and its Directors in his latter years in connection with the Imperial College of Tropical Agriculture, Trinidad, in his capacity as Chairman of the Governing Body. The many purely botanical matters which concerned the College always received his ready support and encouragement, and his loss will be felt very deeply in many spheres of scientific activity.

Official Guide to Museum No. III, Colonial Timbers and Gymnosperms*.—A third edition of the Official Guide to Museum No. III has just been published. It differs from the two former editions by including descriptions of the systematically arranged economic products of Conifers and other Gymnosperms, and by the specimens in the Main Building being described in numerical sequence instead of in geographical order. The Guide is divided into two parts. Part 1, ending at page 95, describes some 600 kinds of timbers which are chiefly Empire grown. Common and scientific names of the timbers are given, together with native countries and short descriptions of the trees, timber and uses. Part 2 deals with the Gymnosperms which are arranged in cases in the Annex to the main building. The families *Gnetaceae*, *Taxaceae*, *Pinaceae*,

*Official Guide to the Museums of Economic Botany: No. 3, Timbers and Gymnosperms. Obtainable from the Royal Botanic Gardens, Kew. Price 1s. net (by post, 1s. 1½d.).

Ginkgoaceae, and *Cycadaceae*, are dealt with in turn, the 101 special descriptions taking up 36 pages. An index is given of common and scientific names.

East African Pasture Plants*.—The favourable reception of the first Part of this work, which appeared last year, has warranted an early continuation of the series. The second Part, which has now been published, contains descriptions and black and white illustrations of thirty species of grasses, most of which occur generally throughout Tropical East Africa. As in the first Part, the needs of the agriculturist have been kept in view, the species selected being mainly those of economic importance, and which constitute a considerable portion of the vegetation. The notes accompanying the descriptions have been enriched by observations in the field of Mr. T. D. Maitland. Amongst the grasses figured are *Digitaria abyssinica* Stapf, which although sometimes a pestilent weed, may be used for lawns and for fodder; *Panicum trichocladum* Hack., *Penisetum polystachyon* Schult., and *Chloris Gayana* Kunth, three of the more important fodder grasses; also *Melinis minutiflora* P. Beauv., which may be of value in the control of the Tsetse fly.

The Propagation of Hardy Trees and Shrubs.†—This small volume of one hundred and twenty pages should prove of considerable value to cultivators of trees and shrubs, a branch of horticulture in which interest is spreading widely. The various methods of propagation by seeds, cuttings, layering, and grafting and budding are dealt with in separate chapters, with a special chapter dealing with the propagation of conifers. Chapter IV on propagation by cuttings is particularly interesting and should be instructive to amateurs whose particular hobby happens to be hardy shrubs. A useful feature at the end of the book is an alphabetical list of the principal genera of trees and shrubs, excluding conifers, with the methods of propagation recommended. The book is well illustrated with eight full page reproductions of photographs depicting in a very helpful manner the various operations connected with the several methods of propagation.

South African Trees.‡—Dr. Sim's object in this volume is to render available for the farmer all necessary information concerning the growing of a forest crop on a quick rotation in comparatively small lots on a farm. He discusses the general position of South Africa

*East African Pasture Plants. II. East African Grasses. The Crown Agents for the Colonies, 4, Millbank, London, S.W., 1927, pp. 56, text figs. 30. Price 3s.

†By G. C. Taylor, assisted by F. P. Knight. Dulau & Co., 32, Old Bond Street, London, W.1. 1927, pp. 120, pl. 8. Price 5s.

‡Tree planting in South Africa, by T. R. Sim. The Natal Witness, Ltd., Pietermaritzburg, South Africa, 1927, pp. 454, ill. 74.

to the world's timber supply, and what the farmer can do to help himself and his country. He provides a mass of information and statistics of all trees that have proved to be of value in South Africa, or which are likely to be successful. The selection of trees and the sites best suited to particular kinds are discussed and details are given for planting and arrangement of farm plots. Southern Rhodesia and Portuguese East Africa are considered separately. The chief points of interest of the principal trees mentioned are shown in a series of line drawings grouped at the end of the volume. The work provides a very interesting treatise on the subject for a special situation, which will not be common to all countries. It purposely avoids the science and application of forestry proper, and at the same time it is much fuller and a more extensive treatment than a work on arboriculture only. It is a work of reference primarily for the home and farm, but should equally find a place in the college and office library. The comprehensive bibliography and full index have particular value in a work of this nature.

The Book of Bulbs.*—The object of this book is to introduce and further the cultivation of bulbs in the home garden. It is written in popular style and is intended for American readers. The photographs are of general views and individual specimens and are well produced. The numerous text figures illustrate different phases in bulb cultivation and the variety of garden forms of common flowers. It is a comprehensive and handy volume which will appeal to the amateur in the United States.

We record with great regret, as this number goes to the printers, the death on the 12th of October of Dr. B. DAYDON JACKSON. A notice of his contributions to botany will appear in the next number of the Bulletin.

*By F. F. Rockwell. Macmillan & Co., Ltd., 1927. Pp. xv+264, pl. 30, text figs. Price 12s. 6d.